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**UTILITY PATENT APPLICATION TRANSMITTAL  
(Large Entity)***(Only for new nonprovisional applications under 37 CFR 1.53(b))*Docket No.  
769-254Total Pages in this Submission  
34**TO THE ASSISTANT COMMISSIONER FOR PATENTS**Box Patent Application  
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

**PERPENDICULAR PERFORATION ON ZIPPER TAPE FOR AIR EVACUATION OF PACKAGE**

and invented by:

**Eric P. Plourde and John H. Schneider**If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: \_\_\_\_\_

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: \_\_\_\_\_

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: \_\_\_\_\_

Enclosed are:

**Application Elements**

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 9 pages and including the following:
  - a. ☒ Descriptive Title of the Invention
  - b. ☐ Cross References to Related Applications *(if applicable)*
  - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
  - d. ☐ Reference to Microfiche Appendix *(if applicable)*
  - e. ☒ Background of the Invention
  - f. ☒ Brief Summary of the Invention
  - g. ☒ Brief Description of the Drawings *(if drawings filed)*
  - h. ☒ Detailed Description
  - i. ☒ Claim(s) as Classified Below
  - j. ☒ Abstract of the Disclosure

# UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

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Total Pages in this Submission  
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## Application Elements (Continued)

3. ☒ Drawing(s) (when necessary as prescribed by 35 USC 113)
- a. ☐ Formal Number of Sheets \_\_\_\_\_
- b. ☒ Informal Number of Sheets 2
4. ☒ Oath or Declaration
- a. ☒ Newly executed (original or copy) ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional application only)
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s) named in the prior application,  
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference (usable if Box 4b is checked)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied  
under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby  
incorporated by reference therein.
6. ☐ Computer Program in Microfiche (Appendix)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (if applicable, all must be included)
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy (identical to computer copy)
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

## Accompanying Application Parts

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(B) Statement (when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☒ Information Disclosure Statement/PTO-1449 ☒ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing

☐ First Class ☒ Express Mail (Specify Label No.): EK052281394US

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(Only for new nonprovisional applications under 37 CFR 1.53(b))

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## Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)

16. ☒ Additional Enclosures (please identify below):

Associate Power of Attorney

## Fee Calculation and Transmittal

### CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	10	- 20 =	0	x \$18.00	\$0.00
Indep. Claims	2	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$690.00
OTHER FEE (specify purpose) recording assignment					\$40.00
TOTAL FILING FEE					\$730.00

- ☐ A check in the amount of \_\_\_\_\_ to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. 50-1145 as described below. A duplicate copy of this sheet is enclosed.
- ☒ Charge the amount of \$730.00 as filing fee.
  - ☒ Credit any overpayment.
  - ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
  - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Signature

Dated: March 10, 2000

Gerald Levy, Esq.  
Reg. No. 24,419  
PITNEY, HARDIN, KIPP & SZUCH LLP  
711 Third Avenue  
New York, New York 10017

CC:

(212)687-6000

769-254

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eric P. Lourde  
Serial No.: N/A  
Filed: Herewith  
Art Unit: N/A  
For: PERPENDICULAR PERFORATION ON ZIPPER  
TAPE FOR AIR EVACUATION OF PACKAGE  
Examiner: N/A

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PRELIMINARY AMENDMENT

Honorable Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

S I R:

Prior to examination of the enclosed patent application,  
please amend the above-identified application as follows:

EK05228139403

In the Claims:

Please amend Claims 1 and 2 and add Claim 11 as follows:

1. (amended) A method for providing vent apertures to a web component of a plastic bag, comprising the steps of:

providing a cutter which cuts [cutting wheel which rotates about an axis, a periphery of said cutting wheel including teeth] a line of vent apertures along a first direction, said vent apertures being oriented in a second direction which [are] is not [perpendicular] parallel to [said axis] first direction;

providing an anvil means against which said cutter [cutting wheel] bears, thereby creating a nip;

drawing the web component through said nip formed between said cutter [cutting wheel] and said anvil means thereby forming said line of vent apertures in the web component [cut by said teeth].

Claim 2, line 1, delete "1" and substitute --11-- therefor.

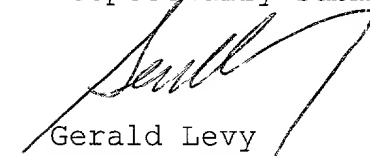
11. (new) The method of Claim 1 wherein said cutter is a cutting wheel which rotates about an axis, a periphery of said cutting wheel including teeth which are not perpendicular to

said axis.

REMARKS

Early examination and allowance are respectfully requested.

Respectfully submitted,



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PERPENDICULAR PERFORATION ON ZIPPER TAPE  
FOR AIR EVACUATION OF PACKAGE

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to the use of perpendicular perforations on a zipper tape for the evacuation of air entrapped in a package, such as a plastic bag.

Description of the Prior Art

In the prior art, it is known to provide perforations to provide for a predetermined tear line across sheet media. In order to increase the chances that the resulting tear remains on the tear line, the tear line can comprise colinear line segments oriented in the direction of the perforation. However, if the perforations are desired for some purpose other than providing a tear line, for example to provide for evacuation of air from within a package, the use of a tear line comprised of colinear line segments oriented in the direction of the perforation is disadvantageous in that this increases the chances of tear propagation along the tear line.

Prior art slit perforating uses a round wheel with raised teeth around its periphery to cut slits which are colinear line segments (see Figure 1). The teeth are pressed against a hardened anvil roller and a web, or sheet, of material is pulled between the perforating wheel and the anvil roller. Where the tooth comes into contact with the

anvil roll a slit (cut) is left in the web. Between the teeth the web is left intact (tie). The lengths of these cuts and ties along with the material being perforated determines the tendency of the web to tear along the perforation. A low ratio of tie area to cut area is illustrated in Figure 1 and results in a maximized likelihood of tearing. However, in order to minimize the likelihood of tearing, it is necessary to have a high ratio of tie area to cut area. In other words, in order to reduce tear tendency with traditional slit perforating, a relatively large tie area is needed, but this large tie area would result in a low number of slits per lineal inch.

Air evacuation slits are typically very small, such as 0.008 inches, to keep the contents of the bag (such as flour) from being forced out through the slits when the package is compressed to evacuate the air. A large number of slits are required to evacuate air through the very small slits quickly enough so that it does not slow down the automatic packaging equipment.

Moreover, air evacuation apertures for containers made from sheets of plastic web, such as plastic bags, are frequently formed by lasers, which can be expensive.

Prior art references disclosing tear-open elements for carrier stock include U.S. Patent No. 5,115,910 entitled "Carrier Stock With Tear-Open Band Segments" issued to Klygis et al. on May 26, 1992 and U.S. Patent No. 5,020,661



entitled "Carrier Stock With Tear-Open Tabs" issued to Marco et al. on June 4, 1991.

#### OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide an apparatus and method for quickly evacuating air from a package.

It is therefore a further object of this invention to provide an apparatus and method to provide a perforation which is tear resistant.

It is therefore a still further object of this invention to provide an apparatus and method to provide a perforation with a high ratio of tie area to cut area.

It is therefore a still further object of this invention to provide an apparatus and method which achieves the above objects at a low price.

These and other objects are attained by providing zipper tape with a perforation comprised of a series of tears which are parallel line segments which are perpendicular (or at least something other than parallel or colinear) to the direction of the perforation. A cutting wheel is used to generate this perforation.

### BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a perspective view of a cutting wheel of the prior art providing a perforation of the prior art.

Figure 2 is a perspective view of the cutting wheel of the present invention providing a perforation of the present invention.

Figure 3 is a plan view of a typical plastic bag incorporating the perforation of the present invention.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like numerals indicate like elements throughout the several views, one sees that Figure 2 is a perspective view of cutting wheel 100 which rotates about axis 102. The peripheral surface 104 of cutting wheel 100 includes spaced parallel blades 106 which are parallel with axis 102. The spacing between successive blades 106 is chosen to be equal to the desired tie length, while the length of each blade 106 is chosen to be equal to the desired cut length.

Cutting wheel 100 bears against anvil roller 200 which rotates about axis 202. Zipper tape 10 (or other sheet media) is drawn through the nip formed between opposing anvil roller 200 and rotating cutting wheel 100 thereby

cutting perforations 103 in the image of the peripheral surface 104 including spaced parallel blades 106. Perforations 103 are parallel to each other, perpendicular to the direction of the row of perforations, and as stated above, have a tie distance equal to the spacing between cutting blades 106 and a cut distance equal to the length of cutting blades 106.

Alternatively, cutting blades can be oriented in directions which, while not colinear with each other, are something other than parallel, such as alternating oblique lines (e.g., /\ /\ /\ /\ /\ /\ /\ /\) or even pseudo-random orientations.

A resulting typical plastic bag 20 is shown in Figure 3, including mouth 22 sealed by zipper profile 24 formed on zipper tape 10. Zipper tape 10 is secured to the walls 30 of the plastic bag 20. Perforations 103 may be formed inwardly adjacently from zipper profile 24 and are sized to allow air within plastic bag 20 to escape while not allowing the contents of the plastic bag 20 (such as flour) to escape through perforations 103. A typical length of the individual perforations is 0.008 inches. The parallel non-colinear orientation of the perforations with respect to each other results in a configuration where a tear is unlikely to propagate along the line of perforations 103.

Thus the several aforementioned objects and advantages are most effectively attained. Although a single preferred embodiment of the invention has been disclosed and described

in detail herein, it should be understood that this invention is in no sense limited thereby and its scope is to be determined by that of the appended claims.

## CLAIMS

### What is Claimed is:

1. A method for providing vent apertures to a web component of a plastic bag, comprising the steps of:  
    providing a cutting wheel which rotates about an axis, a periphery of said cutting wheel including teeth which are not perpendicular to said axis;  
    providing an anvil means against which said cutting wheel bears, thereby forming a nip; and  
    drawing the web component through said nip formed between said cutting wheel and said anvil means thereby forming apertures in the web component cut by said teeth.
2. The method of Claim 1 wherein said teeth are parallel to said axis.
3. The method of Claim 2 wherein said teeth are sized and spaced so as to form apertures which allow air to pass therethrough, but which do not allow selected solids to pass therethrough.
4. The method of Claim 3 wherein said anvil means is a rotating wheel.

5. The method of Claim 4 wherein said web component is a zipper tape.

6. A plastic bag including walls and a mouth formed between said walls, at least one of said walls including a web component with a row of apertures which are not colinear with one another, said row of apertures being mechanically cut through said at least one wall.

7. The plastic bag of Claim 6 wherein said apertures are parallel to each other, but perpendicular to a direction of travel of said row.

8. The plastic bag of Claim 7 wherein said apertures are sized to allow air to pass therethrough, but not to allow selected solids to pass therethrough.

9. The plastic bag of Claim 8 wherein said web component is a zipper tape.

10. The plastic bag of Claim 6 wherein both of said walls include said web component with said row of said apertures.

### ABSTRACT OF THE DISCLOSURE

The plastic bags are provided with a web tape with a row of apertures which are cut parallel to each other, but perpendicular to the direction of travel of the row. The apertures are not colinear with one another. The apertures are sized to allow air to pass therethrough but not to allow selected solids to pass therethrough. These apertures are cut with a rotating wheel with teeth parallel to the axis of rotation and sized to provide the apertures of the desired size.

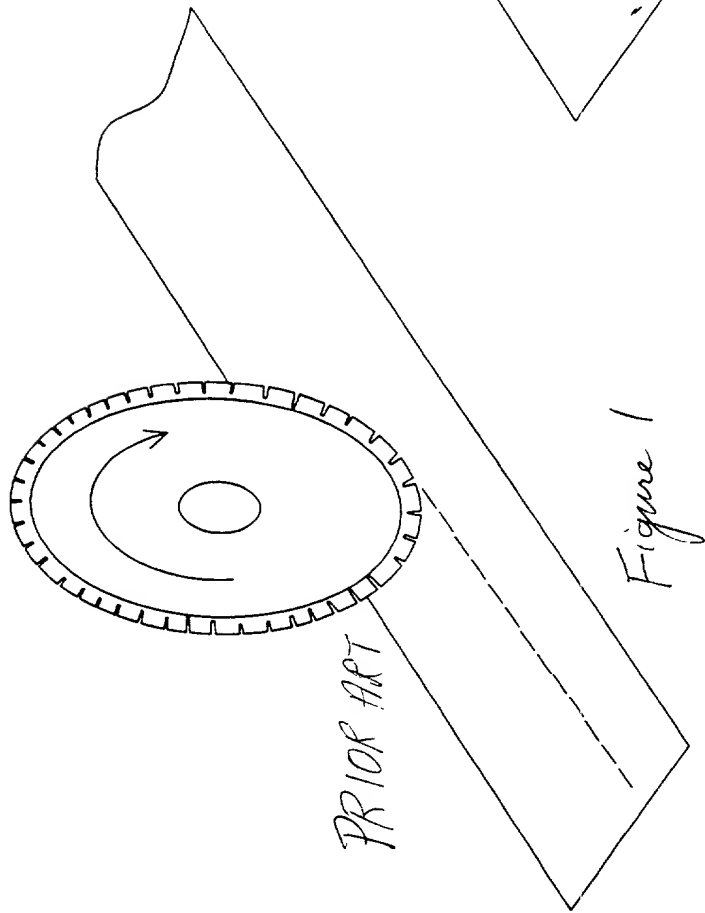


Figure 1

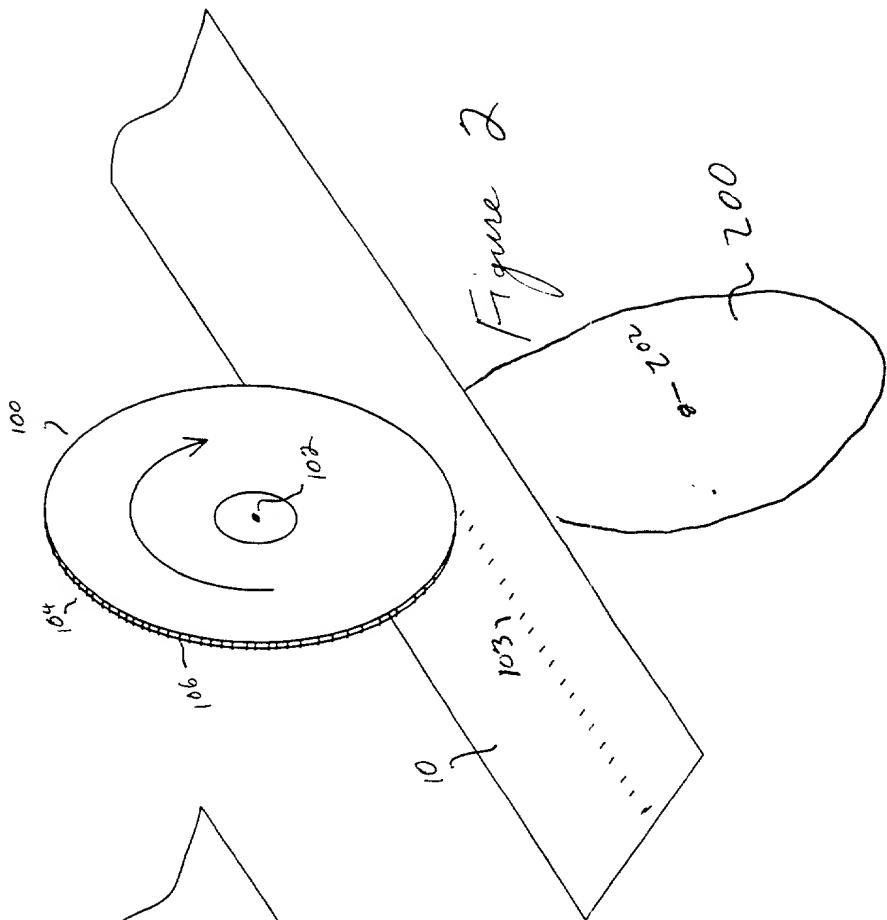


Figure 2



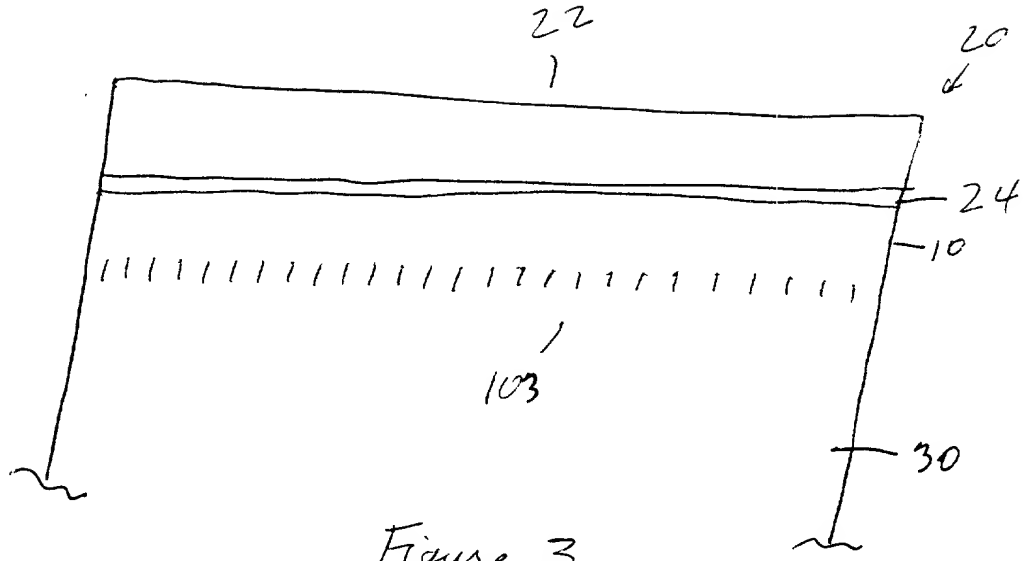


Figure 3

## COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor(s), I (We) hereby declare that:

My (Our) residence, post office address and citizenship are as stated below next to my (our) name(s). I (We) believe I (we) am (are) the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**PERPENDICULAR PERFORATION ON ZIPPER TAPE FOR AIR EVACUATION OF PACKAGE**, the specification of which is attached hereto unless the following is checked:

\_ was filed on \_\_\_\_\_ as United States Application

Number or PCT International Application Number

and was amended on \_\_\_\_\_ (if applicable).

I (We) hereby state that I (we) have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I (We) acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)			
NUMBER	COUNTRY	DATE FILED	PRIORITY CLAIMED
			YES NO
			YES NO
			YES NO

I (We) hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

APPLICATION NO.	FILING DATE	STATUS PATENTED, PENDING, ABANDONED

I (We) hereby declare that all statements made herein of my (our) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I (We) hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph C. Sullivan, Registration No. 18,720; Gerald Levy, Registration No. 24,419; Ronald R. Santucci, Registration No. 28,988; Ronald E. Brown, Registration No. 32,200; John Gulbin, Registration No. 33,180; Richard J. Danyko, Registration No. 33,672. **\*I (We) further authorize my (our) attorney to insert the proper serial number and filing date awarded to my (our) application on this document, above my (our) signature(s).**



SEND CORRESPONDENCE TO: **Gerald Levy, Esq.**

**PITNEY, HARDIN, KIPP & SZUCH LLP**

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New York, New York 10017-4059

DIRECT TELEPHONE CALLS TO: Gerald Levy

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FULL NAME OF SOLE OR FIRST INVENTOR <b>Eric P. Plourde</b>		CITIZENSHIP <b>United States</b>
INVENTOR'S SIGNATURE 		DATE <b>March 8, 2000</b>
RESIDENCE <b>7519 West 175<sup>th</sup> Street 2W, Tinley Park, Illinois 60477</b>		
POST OFFICE ADDRESS <b>7519 West 175<sup>th</sup> Street 2W, Tinley Park, Illinois 60477</b>		
FULL NAME OF SECOND JOINT INVENTOR, IF ANY <b>John H. Schneider</b>		CITIZENSHIP <b>United States</b>
INVENTOR'S SIGNATURE 		DATE <b>3-8-00</b>
RESIDENCE <b>22124 Princeton Court, Frankfort, Illinois 60423</b>		
POST OFFICE ADDRESS <b>22124 Princeton Court, Frankfort, Illinois 60423</b>		

769-254

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re of the application of: Eric P. Plourde and John H. Schneider

Serial No. N/A

Filed: Herewith

For: **PERPENDICULAR PERFORATION ON ZIPPER TAPE  
FOR AIR EVACUATION OF PACKAGE**

711 Third Avenue  
New York, New York 10017  
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**ASSOCIATE POWER OF ATTORNEY**

Assistant Commissioner for Patents  
Washington, D.C. 20231

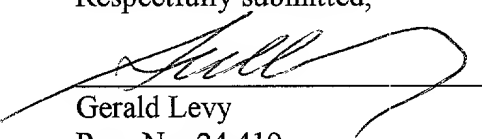
S I R:

I hereby appoint Thomas W. Buckman (Registration Number 25,756), Donald J. Breh (Registration Number 30,159), John P. O'Brien (Registration Number 22,764), Mark W. Croll (Registration Number 31,098), and Lisa Soltis (Registration Number 40,623), as my associate attorneys in the above-entitled application, to inspect and prosecute this application, to make alterations and amendments therein, and to transact all business in the Patent and Trademark Office.

Please continue to address all future communications to:

Gerald Levy, Esq.  
Pitney, Hardin, Kipp & Szuch LLP  
711 Third Avenue  
New York, New York 10017

Respectfully submitted,

  
Gerald Levy  
Reg. No. 24,419